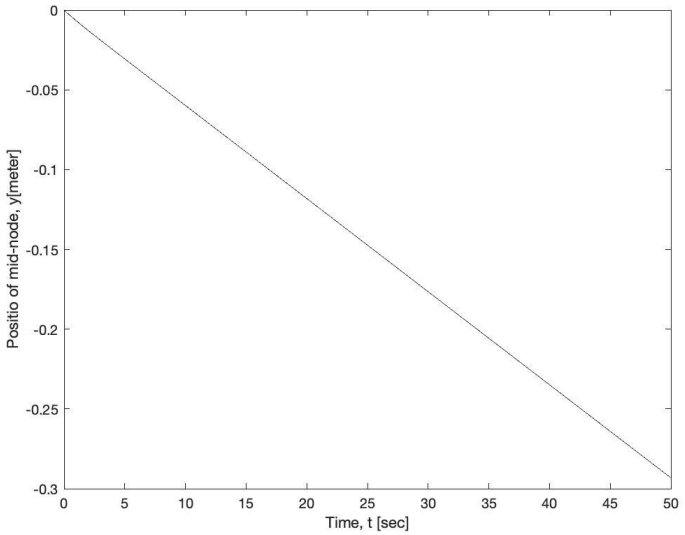
Problem 1:

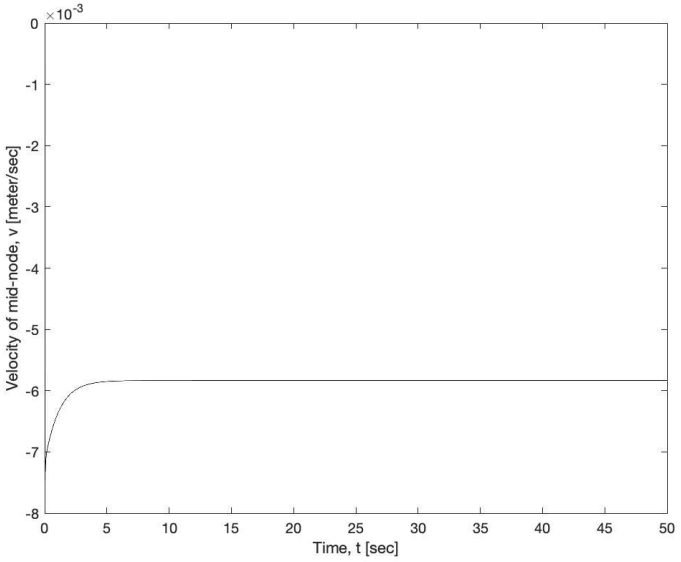
1. Question: What happens to the turning angle if all the radii (R_1,R_2,R_3) are the same?Does your simulation agree with your intuition?
    a. Answer: There might be no bending between R1-R2 and R2-R3. It is due to the same size, they would have the same weight in the fluid. Therefore, three spheres would move with the same speed.
2. Question: Try changing the time step size (Δt), particularly for your explicit simulation, and use the observation to elaborate the benefits and drawbacks of the explicit and implicit approach.
    a. Answer:
        i. With smaller time step,

Problem 2:

1. Vertical position and velocity of the middle node:

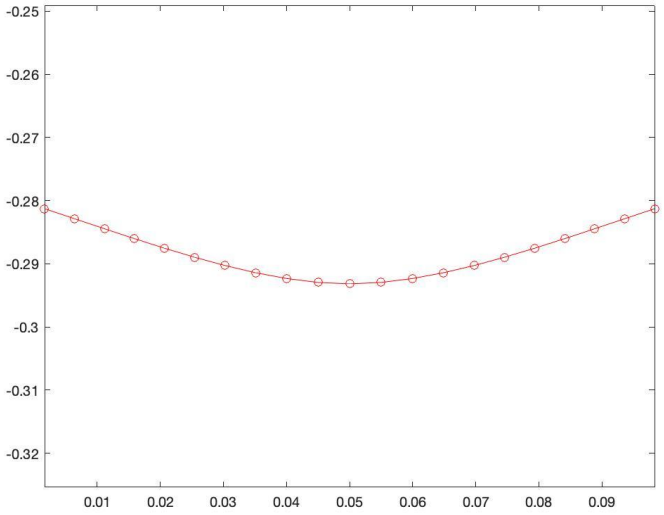
a.





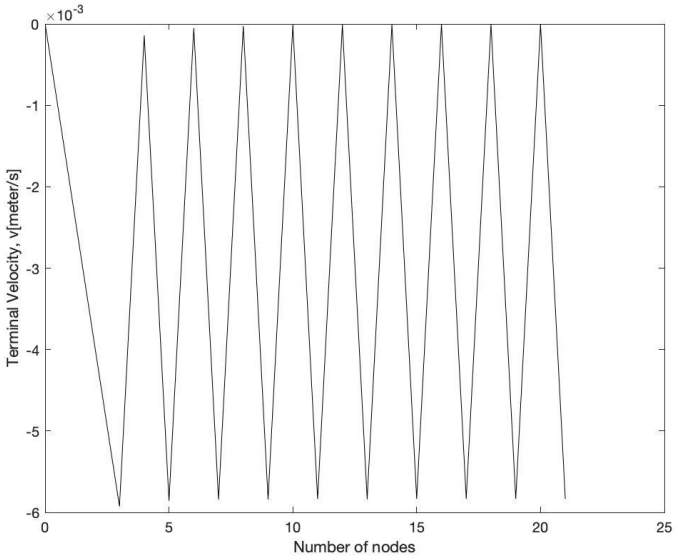
b. Terminal Velocity is: -0.058 (m/sec)

2. Final deformed:



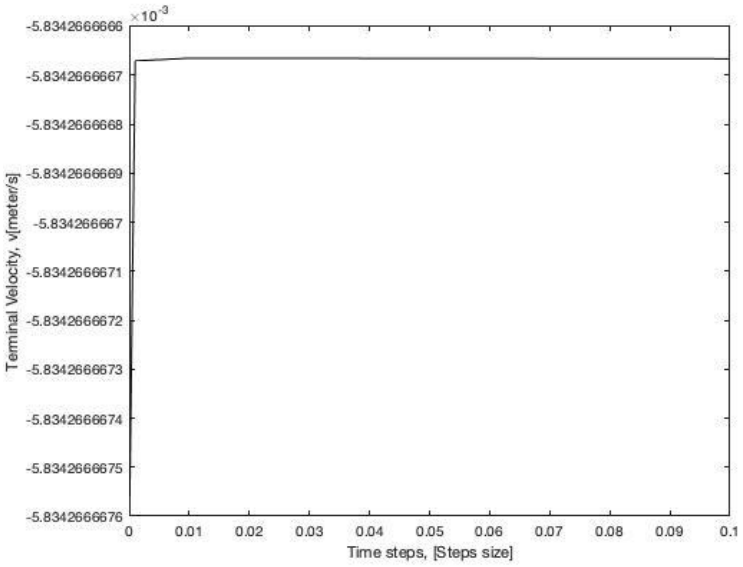
a.

3. Spatial Discretization:
    a. Number of nodes VS Terminal velocity:



i.

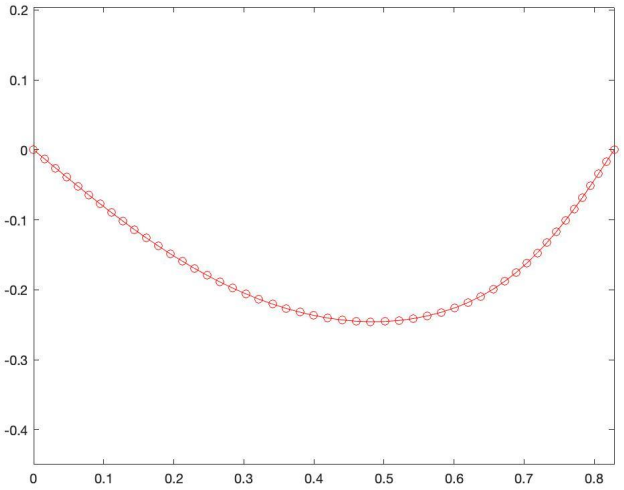
    b. Time Step size VS terminal velocity:



i.

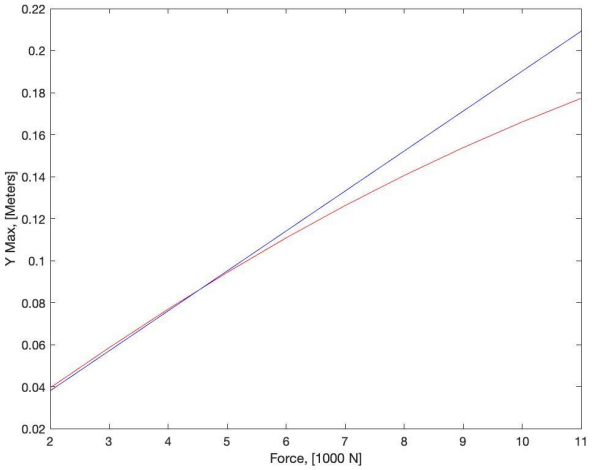
Problem 3:

1. Comparing Y_max (Theory and observation)
    a. Observation from Matlab plot: Y_max = 0.039455
    b. Yes, it reaches a steady value.
2. Benefit of our simulation:
    a. P = 20000:



i.

    b. Comparison:



i.

ii. While force is larger than 5000 N, the gap between theory and actual deformation is getting larger and larger.